optionally substituted heteroaryl, and a nitrogen protecting group; or optionally two instances of R^{D1a} are taken together with their intervening atoms to form a substituted or unsubstituted heterocyclic or substituted or unsubstituted heteroaryl ring;

R^2 is hydrogen, halogen, optionally substituted acyl, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted carbocyclyl, optionally substituted heterocyclyl, optionally substituted aryl, or optionally substituted heteroaryl;

each instance of R is independently selected from the group consisting of hydrogen, optionally substituted alkyl, and a nitrogen protecting group;

R^x is selected from the group consisting of hydrogen, optionally substituted alkyl, and a nitrogen protecting group;

n is 0, 1, 2, 3, 4, or 5;

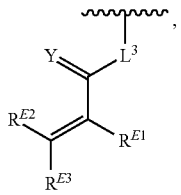
X is N, —NR^x—, S, or O, as valency permits;

Y1 is N, —NR^x—, S, or O, as valency permits;

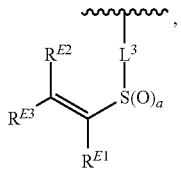
L is an optionally substituted C_{1-6} hydrocarbon chain, optionally wherein one or more carbon units of the hydrocarbon chain are independently replaced with —C═O—, —O—, —S—, —S(═O)O—, —NR(C═O)—, —NR—, optionally substituted carbocyclylene, optionally substituted heterocyclylene, optionally substituted arylene, or optionally substituted heteroarylene;

$R^{3'}$ is a warhead of formula:

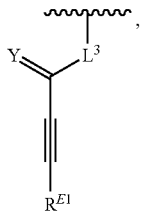
(i-1)



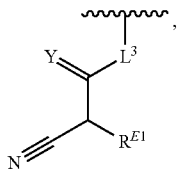
(i-2)



(i-3)

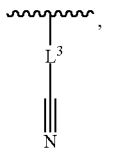


(i-4)

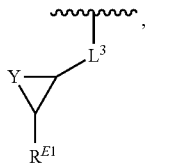


-continued

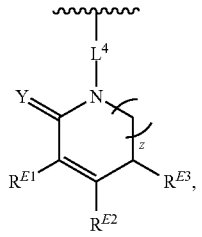
(i-5)



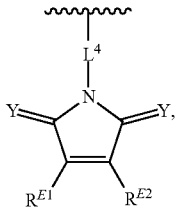
(i-6)



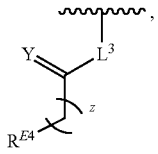
(i-7)



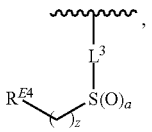
(i-8)



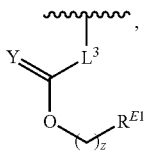
(i-9)



(i-10)



(i-11)



(i-12)